AMENDMENTS TO THE CLAIMS

Please cancel claims 12, 13, 14, 15, 17 and 18 without prejudice. Please add new claims 21-26.

1. (CURRENTLY AMENDED) An apparatus comprising:

a first circuit configured to (i) generate a first motion vector for a block at an integer-pel resolution and (ii) determine a single block size among a plurality of different block sizes associated with said first motion vector; and

a second circuit configured to (i) generate a plurality of second motion vectors at a ~~sub-pel~~ half-pel resolution by searching a plurality of reference samples proximate said first motion vector using only said single block size, (ii) generate a plurality of third motion vectors at a quarter-pel resolution and ~~(ii)~~ (iii) determine a final motion vector for said block as a particular one of said first motion vector, said second motion vectors and said third motion vectors ~~best matching a plurality of reference samples~~.

2. (CURRENTLY AMENDED) The apparatus according to claim 1, wherein said second circuit comprises a plurality of processing elements configured to generate a plurality of difference values by calculating a plurality of absolute values

substantially simultaneously, wherein each one of said processing elements is configured to generate ~~a~~ one of said difference values ~~value by calculating an absolute difference~~ between a first sample from said block and a corresponding second sample of said reference samples ~~substantially simultaneously~~.

3. (CURRENTLY AMENDED) The apparatus according to claim 2, wherein (i) said second circuit further comprises an accumulation circuit configured to generate a plurality of sum values ~~value~~ by calculating a plurality of sum of absolute differences from said difference values and (ii) each one of said sum values is calculated from a corresponding plurality of said difference values in parallel.

4. (CURRENTLY AMENDED) The apparatus according to claim 3, wherein said second circuit further comprises ~~a~~ an identification circuit configured to ~~generate a~~ identify said final motion vector by ~~storing~~ determining a lowest of said sum values associated with said single block ~~value from a plurality of searches at said sub-pel resolution~~.

5. (CURRENTLY AMENDED) The apparatus according to claim 4, wherein said plurality of processing elements form a three

by three array generating nine of said difference values in parallel.

6. (CURRENTLY AMENDED) The apparatus according to claim 1, wherein said second circuit further comprises a predictor memory configured to store said reference samples received from said first circuit.

7. (CURRENTLY AMENDED) The apparatus according to claim 6, wherein said second circuit further comprises a shifter circuit configured to barrel-shift said reference samples read from said predictor memory.

8. (CURRENTLY AMENDED) The apparatus according to claim 7, wherein said second circuit further comprises a first interpolation circuit configured to generate additional reference samples at ~~a~~ said half-pel resolution by interpolating said reference samples received from said shifter circuit.

9. (CURRENTLY AMENDED) The apparatus according to claim ~~6~~ 8, wherein said second circuit further comprises a second interpolation circuit configured to generate more reference samples at ~~a~~ said quarter-pel resolution by interpolating said reference samples received from said first interpolation circuit.

10. (CURRENTLY AMENDED) The apparatus according to claim 7, wherein said shifter circuit is further configured to shift each of a plurality of columns of said reference samples received from said predictor memory, one of said columns at a time, to align with seven outputs.

11. (CURRENTLY AMENDED) A method for generating a final motion vector for a block, comprising the steps of:

(A) generating a first motion vector at an integer-pel resolution and determining a single block size among a plurality of block sizes associated with said first motion vector;

(B) generating a plurality of second motion vectors by searching a plurality of reference samples proximate said first motion vector at a ~~sub-pel~~ half-pel resolution using ~~a~~ only said single block size ~~associated with said first motion vector~~;

(C) generating a plurality of third motion vectors; and

(D) ~~(C)~~ determining said final motion vector for said block as a particular one of said first motion vector, said second motion vectors and said third motion vectors ~~best matching a plurality of reference samples~~.

12. (CANCELED)

13. (CANCELED)

14. (CANCELED)

15. (CANCELED)

16. (CURRENTLY AMENDED) The method according to claim ~~12~~ 11, wherein step (B) further comprises the sub-step of:

generating said ~~second~~ third motion vectors ~~at a quarter-pel resolution of said sub-pel resolution~~ by searching proximate only one of said second motion vectors ~~said half-pel motion vector~~.

17. (CANCELED)

18. (CANCELED)

19. (CURRENTLY AMENDED) The method according to claim 11, further comprising the step of:

determining said single block size among at least seven block sizes ~~as part of generating said first motion vector~~.

20. (CURRENTLY AMENDED) A circuit comprising:

means for (i) generating a first motion vector for a block at an integer-pel resolution and (ii) determining a single

block size among a plurality of block sizes associated with said first motion vectors;

means for (i) generating a plurality of second motion vectors at a half-pel resolution by searching a plurality of reference samples proximate said first motion vector using ~~a~~ only said single block size and (ii) determining a plurality of third motion vectors at a quarter-pel resolution using only said single block size ~~associated with said first motion vector at a sub-pel resolution~~; and

means for determining ~~said~~ a final motion vector for said block as a particular one of said first motion vector, said second motion vectors and said third motion vectors ~~best matching a plurality of reference samples~~.

21. (NEW) The apparatus according to claim 1, wherein generation of said third motion vectors comprises searching proximate only one of said second motion vectors uses only said single block size.

22. (NEW) The apparatus according to claim 6, further comprising:

a search memory configured to store said reference samples used to determine said first motion vector; and

an external memory configured to store both (i) said reference samples and (ii) said block.

23. (NEW) The method according to claim 11, further comprising the step of:

generating a plurality of difference values by calculating a plurality of absolute differences substantially simultaneously, wherein each of said absolute differences is between a first sample from said block and a corresponding second sample of said reference samples.

24. (NEW) The method according to claim 23, further comprising the step of:

generating a plurality of sum values by calculating a plurality of sum of absolute differences from said difference values, wherein each one of said sum values is calculated from a corresponding plurality of said difference values in parallel.

25. (NEW) The method according to claim 24, further comprising the step of:

identify said final motion vector as a lowest of said sum values associated with said single block.

26. (NEW) The method according to claim 16, wherein generating of said third motion vectors is performed at only said single block size.